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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/735,826	12/13/2000	Lary R. Larson	P-8003	4912

27581 7590 02/26/2003

MEDTRONIC, INC.
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EXAMINER

UMEZ ERONINI, LYNETTE T

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 02/26/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant(s) N .

Applicant(s)

09/735,826

LARSON, LARY R.

Examiner

Art Unit

Lynette T. Umez-Eronini

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 23-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hubbard (US 6,051,887) in view of Akram (US 5,808,360).

As pertaining to claim 22, Hubbard teaches a method for forming a stackable wafer for use in an implantable medical device (column 1, lines 6-9). The method comprises:

"The semiconductor stacked device 38 may be encapsulated with encapsulation material **41**, such as commercially available silicone or epoxy to form an encapsulated stacked device **50** (column 12, lines 47-50), which reads on, providing housing;

"an implantable medical apparatus having at least one semiconductor stacked device according to the present invention therein, e.g., a stacked memory device; a first and second mounting substrate each having a semiconductor die associated therewith stacked using a plurality of substantially columnar solder connections; mounting substrates for the first and second semiconductor die including a first mounting substrate which has conductive traces for electrical connection to die bond

pads of a first semiconductor die and a second mounting substrate which includes conductive vias there through" (column 3, lines 38-48), "... the electronic features and operations of the implantable medical device may be implemented in discrete logic or as a microcomputer-based system" column 5, lines 61-64), and "... the semiconductor stacked device according to the present invention may be a stacked micro controller die and memory die or processor die and memory die. Further, the semiconductor stacked device may be two stacked memory die such as with chip select addressing" (column 6, lines 5-10). Hence the above reads on,

mounting a semiconductor module inside the housing, wherein said semiconductor module includes first and second semiconductor die in a stacked arrangement, the stacked semiconductor die having circuitry implementing an operational implantable medical function.

The method further comprises, "the semiconductor die **52** includes die bond pads **92** for use in electrically connecting the circuits of the die externally to other elements, circuits, etc." (column 7, lines 54-57), which reads on,

providing a plurality of electrical connections extending between the die.

Hubbard differs in failing to teach each electrical connection comprising an interconnection between a bump on an upper surface of the first die and a contact pad on a lower surface of the second die, **in claim 22**.

Akram illustrates the interaction between microbump (same as applicant bump) **30** (or **30A**) and bond pads (same as applicant's contact pad) **38** on the die **36** and further teaches permanent electrical connection of the microbump **30** (or **30A**) and bond

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pad **38** (column 6, lines 21-29) and improving the method for forming a microbump interconnect comprising a substrate with conductor and low resistance microbumps formed thereon using semiconductor circuit fabrication techniques (column 1, lines 63-67).

It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Hubbard by using Akram's method of positioning and coupling the bump of the first wafer with the contact pad of the second wafer for the purpose of improving the method for forming a microbump interconnect comprising a substrate with conductor and low resistance microbumps formed thereon using semiconductor circuit fabrication techniques.

Hubbard further teaches, " . . . the case where implanted medical device **12** is a pacemaker implanted in body **10**, the pacemaker **12** includes at least one or both of pacing and sensing leads represented generally as leads **14** to sense electrical signals attendant to the depolarization and repolarization of the heart **16**." and "input/output circuit **24** may include any other number of circuits in addition to the controller **32** such as necessary for accomplishing the function of the implantable medical device **20**. Hence, the aforementioned reads on,

wherein delivery of electrical stimulation therapy is performed via and circuitry, **in claim 24**; and

wherein pacing and sensing function are implemented by the circuitry, **as in 25**.

Hubbard differs in failing to teach a solder connection is provided for the interconnection between a bump on an upper surface of the first die and a contact pad on a lower surface of the second die, **in claim 23**.

Akram teaches filling opening with suitable metals (same as applicant's solder) include copper, nickel, gold and palladium (column 4, lines 59-60) and an interconnect ~~can provide a permanent electrical connection (same as applicant's interconnection~~ between a bump and contact pad) in the fabrication of electronic devices (column 2, lines 58-61), which reads on providing a solder connection for the interconnection between a bump on an upper surface of the first die and a contact pad on a lower surface of the second die.

It is the examiner's position that it would have been obvious to one having ordinary skill in the art the time of the claimed invention to modify Hubbard's conductive material by using a suitable metal, for example, copper and nickel as taught by Akram for the purpose of providing a permanent electrical connection in the fabrication of electronic devices.

Conclusion

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 703-306-9074. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

ltue
February 24, 2003

Richard Bueker
RICHARD BUEKER
PRIMARY EXAMINER
ART UNIT 1763